

Description

Conforming Lid Socket for Leaded Surface Mount Packages

BACKGROUND OF INVENTION

FIELD OF THE INVENTION

[0001] This invention relates to Leaded Surface Mount Packages and a Socket which provides reliable contact for all it's leads. The invention *Conforming Lid Socket* provides a sufficient pressure on each lead of the package against rigid, immovable, contact. The invention simplifies socket design, reduces the cost of manufacturing and improves socket's electrical performance.

PRIOR ART OF THE INVENTION

[0002] Conventionally, various sockets have been designed with contacts made of springs shaped as modified letters U or C, or using spring-loaded (pogo) pins. The package leads either rest on the socket contacts and are pressed down by a socket lid, ("hinge-lid", also called "clam-shell de-

sign"), or the leads rest on plastic rim in the socket and are pressed down by pre-tensioned contacts ("Open-top design"), or the C shaped spring contact provides both the bottom contact and the top pre-tensioned contact – a variation of "Open-top" socket.

[0003] Some conventional sockets do not use individual contact pins the contacts are pads on a printed circuit board. A conductive polymer (in Z-direction only) is placed over the pads, the package is placed on the polymer. The lid puts pressure on the leads, compresses the polymer and thus compensates for the differing thickness of individual leads.

[0004] All conventional sockets use conforming contacts – springs or elastomers. This approach results in complex design and introduces unwanted parasitic inductance, capacitance and in the case of polymer design, resistive components.

SUMMARY OF INVENTION

[0005] invention *Conforming Lid Socket* substantially eliminates drawbacks and limitations of conventional sockets for electronic devices in leaded surface mount packages and provides compact and economical sockets with better electrical performance. Electronic device in the leaded

surface mount package can be Integrated Circuits (IC), discrete semiconductor (Discrete), passive component (such as resistor and capacitor) or electromechanical device (such as relays).

BRIEF DESCRIPTION OF DRAWINGS

- [0006] Three dimensional view showing *Conforming Lid Socket* according to a first embodiment of the present invention.
Three dimensional view showing *Conforming Lid Socket* according to a second embodiment of the present invention
Cross sectional view showing *Conforming Lid Socket* according to a third embodiment of the present invention

DETAILED DESCRIPTION

FIRST EMBODIMENT

- [0007] FIG 1, Three dimensional view showing *Conforming Lid Socket* according to a first embodiment of the present invention. As shown in this figure the *Conforming Lid Socket* of this embodiment has RIGID LID with an opening having INNER WALL on each side of a surface mount package BODY and "L" SHAPE LEADS. The BODY is inserted into this opening, with a vertical element of the "L" SHAPE LEADS pressing against the INNER WALLS, forming a tight fit. The BODY is pushed in until the bottom element of the "L"

SHAPE LEADS presses against the CONFORMING SURFACE of the RIGID LID. The RIGID LID and BODY subassembly is fastened against the SUBSTRATE carrying the CONTACTING ELEMENTS and optional application circuitry. The SUPPORT PLATE is used to maintain proper connection between the CONTACTING ELEMENT and "L" SHAPED LEADS. Every BODY type requires different RIGID LID and corresponding SUBSTRATE including specific CONTACTING ELEMENT pattern.

SECOND EMBODIMENT

[0008] FIG 2, Three dimensional view showing *Conforming Lid Socket* according to a second embodiment of the present invention. As shown in this figure the *Conforming Lid Socket* of this embodiment is identical to FIG 1, with the exception of the SUBSTRATE which has same size as the RIGID LID and the CONTACTING ELEMENTS are connected to corresponding pins of specific pattern. In this embodiment the *Conforming Lid Socket* may be inserted into appropriate socket or be soldered on printed circuit board.

THIRD EMBODIMENT

[0009] FIG 3, Cross sectional view showing *Conforming Lid Socket* according to a third embodiment of the present invention.

As shown in this figure the *Conforming Lid Socket* of this embodiment has all components consisting of RIGID LID, BODY and SUBSTRATE showing their final assembled placement at which the CONFORMING SURFACE is pressing against bottom element of the "L" SHAPE LEADS and CONTACTING ELEMENT.